公益財団法人　セコム科学技術振興財団
研究成果報告書

研究課題名

入退院を繰り返す心不全患者に対する重症化・再入院予防及び QOL 改善支援

Prevention of readmission and QOL improvement for patients in heart failure

研究期間

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Abstract

Epidemiological study said that the number of Japanese heart failure patients was estimated 1.18 million in 2015 and would rise to 1.3 million in 2030 due to the aging of the population. The readmission rate of heart failure patients is 20-40%, therefore medical expenditure and low QOL has become an unneglectable problem. In order to solve the above problem, the need for home management system has been emerging. In recent years, implemented devices data and weight, blood pressure data are used for remote monitoring. However, despite the effectiveness of implemented devices data, the mental stress because of the implantation was turned out to be overwhelmed for the patients. In the contrast, the researches based on only weight and blood pressure data could not predict the readmission and the exacerbation accurately enough.

The purpose of this research is two phases. First phase is to construct the monitoring system for elderly patients which is able to collect data easily and constantly. The second phase is to identify the particular parameters, and the combinations of which, that could effectively predict the exacerbation by collecting data through non-invasive devices. Electro-cardiogram, heart rate variability, weight, blood pressure were collected, grouped, compared and analyzed based on whether the patient was readmitted or not. In the analysis the statistics of electro-cardiogram, heart rate variability, weight, and blood pressure were calculated. The particular trend of readmission and the particular movement patterns at the moment of the events were searched. In result, we found that decrease of blood pressure and decrease of heart rate variability could be potential risks of exacerbation. Furthermore, the patterns of high rick variabilities of blood pressure, weight and heart rate were also identified.

If we could build an effective algorithm and alert system to predict the exacerbation, strategical medical prevention would be applied more efficiently to prevent admission.